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Forward

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Solid Waste Disposal Alternatives Costs & Requirements

The third in a series of reports for the Solid Waste Management and Resource Recovery Study for the state of Montana prepared by consultants Henningson, Durham and Richardson was given to the Solid Waste Management Bureau last month.

The draft report summarizes the alternative technical and operating requirements and costs for the various solid waste processing, utilization and disposal alternatives applicable in the state. These alternatives include sanitary landfills, transfer stations, process and utilization facilities. The consultants also recommended that the pyrolysis and composting alternatives be eliminated from the study because they are not economically viable at the present time.

Costs for several size facilities are reported for each alternative. For landfills, the disposal cost per ton varies greatly depending on the quantity of waste. For example, the cost to operate a sanitary landfill serving a population of 3,000 persons is \$8.98 per ton while the cost for a sanitary landfill serving 100,000 persons is approximately \$2.65.

Five general types of transfer stations appear to be applicable for the state. In a transfer station, the solid waste from several collection vehicles is consolidated into one large load for transportation to larger, more efficient disposal sites. The simpler stations which serve small populations consist of small containers placed in strategic locations where local residents or collectors can deposit their waste. The containers are then emptied or loaded into special collection vehicles and transported to a disposal site. Larger population centers using more sophisticated facilities deposit the waste in an enclosed building where mechanical equipment is used to transfer and compact the waste into large transfer vehicles. The capital costs vary from \$74,000 for a small station to approximately \$620,000 for a facility which would serve 100,000 people. The subsequent annual costs per ton for 3,000 persons would be \$7.66 or \$1.98 for a facility serving 100,000 persons.

The third alternative analyzed included some degree of solid waste processing in conjunction with subsequent disposal or resource recovery. The degree of processing is dictated by the demand and markets for the recoverable components and the final use of the processed waste. Three possible degrees of processing could be required to prepare solid waste for the potential recovery applications in the state. These vary from shredding and extracting the ferrous metals to a complex process in which the wastes undergo two stages of shredding, magnetic separation and air classification. The report states capital costs vary from \$1.8 million to \$5.2 million depending upon the degree of processing.

The fourth alternative analyzed is the use of solid waste either as an energy source or as a soil conditioner. Three basic waste utilization systems were analyzed. The most promising system according to the consultants is the direct combustion alternative where solid waste is used as a fuel source in a boiler to produce steam and/or generate electricity. Processed waste can be used either as the primary or as a supplemental fuel. Capital costs for such utilization processes range from \$7.8 million to \$14.6 million if new facilities are required. However, modification of existing boilers to permit use of solid waste will cost much less.

Comments from the Bureau's staff and technical committee will be incorporated in the final report which will be used as a basis for designing a comprehensive solid waste management plan or the state proposing some or all of the above alternatives.

Centralized Transfer Methods Studied

One of the essential items of a statewide Solid Waste Management plan is reduction of costs and increased efficiency in refuse disposal. One alternative is the establishment of centralized

disposal sites. Of course this means there must be a method for local collection for transfer to larger vehicles and final disposal at a larger sanitary landfill or use at a resource recovery facility.

A part of the third report by Henningson, Durham and Richardson explain four methods of transfer, varying in sophistication depending upon the size of the population being served. Transfer systems eliminate small, costly sanitary landfills which serve relatively few people.

1. **Bulk Container or "Green Box" System.** This system is now in use in some Montana counties and being developed for others. It basically consists of placing 4 to 8 cubic yard containers in strategic locations throughout a rural area. The boxes are usually collected 1 to 3 times a week depending upon the location and contributing population and emptied at a centralized disposal site, or transfer station.

2. **Roll-Off Containers.** This is essentially the same as the Bulk Container system except fewer and larger collection points are used. Such facilities use 20 to 50 cubic yard roll-off containers which sit about 10 feet below the dumping site. A special vehicle then picks up the container, leaves another and takes it to a disposal site, a further transfer station or resource recovery facility.

3. **Stationary Compactors.** With this type of transfer station, the refuse is densified by a stationary compactor. For stations collecting 150 tons per week and less, the compactor receives the waste from incoming vehicles which dump it in a hopper positioned directly over the compaction chamber. For greater refuse amounts, i.e. more than 150 tons per week, with more than one stall for dumping, a pit dump or push pit is required. One variation of the push pit system uses a 40 foot long pit equipped with a hydraulic ram which pushes the refuse into a compactor hopper. The refuse is then compacted into a roll-off container or transfer trailer.

4. **Pit Dump Transfer Stations.** In this type of facility, incoming refuse is received in a large open pit where a dozer mangles, compacts, and moves the material to one end of the pit and into open top transfer vehicles. Waste is dumped from the collection truck directly into the pit which offers the advantage of providing storage as part of the operation.

The final recommendations of the Solid Waste Management and Resource Recovery Study will include types of transfer stations consistent with the needs of Montana's rural areas, smaller communities and cities.



Stationary compactor and transfer station

Hand In Hand

The problem of collecting and disposing of the state's garbage is solved through the combination of private enterprise and public services.

Nearly half of the 120 collection facilities in the state are privately owned with eight of the 245 disposal sites privately owned. Generally local governments provide the disposal sites while private haulers collect the refuse. Where private businesses have not developed, local government also provides this service.

The industry of collection/disposal, as it is known today, is relatively new with the latest technology being developed in the last 20-30 years. In Montana, many of the private business are small, family operated concerns.

A good example of such a business is Missoula's City Disposal Company headed by Max Bauer which began in 1946 with two trucks serving about 150 people. For the first few years as the business was slowly growing, the trucks were Bauer's only transportation so they were used for camping and fishing too. Many hours of hard work has paid off. Today the company has 15 trucks, employs 40-45 people and serves nearly all of Missoula County with 18,000 customers.

As the Solid Waste Management Bureau investigates possible new methods of collection, disposal and utilization, it maintains a policy of maximum utilization of private enterprise. The private sector itself constantly strives to keep abreast of new developments in the field. Bauer explained part of this effort consists of studying industry magazines, involvement in the Montana Solid Waste Contractors Association as well as the National Solid Waste Association.

The industry has responded to the needs of communities, often by investing large amounts of money (a new truck costs between \$20,000 and \$30,000), and providing special services which solve local problems. Bauer says it has been particularly challenging to maintain a high level of service combined with increased efficiency and continue to charge reasonable rates to his customers.

This challenge is being met by both the municipal and private collection/disposal facilities in the state working hand in hand to serve the people of Montana.

Clean Up Your Community With A New Approach

The Keep America Beautiful organization is offering information to communities throughout the United States about the Clean Community System, a new behaviorally-based program to control littering.

The system is the outcome of a three-year industry sponsored, action research project which has proven highly successful in three field tested cities. Research documented the attitudes and habits which encourage littering and which make littering accepted. The action plan is based on four components: updated ordinances, improved sanitation technology, continuous public education and vigorous enforcement of sensible regulations.

Communities who are interested in establishing such a program must apply to KAP for certification which will include training of a three-member project team, and the opportunity to purchase, at cost from KAB, new materials designed to streamline the system to the needs of specific localities.

For further information, write to, Keep America Beautiful, Inc. 99 Park Ave, New York, NY 10016.

TERRYS MAIL BOX

Dear Terry:

I've been reading more and more about Oregon's and Vermont's "bottle bills." Do you think Montana should have programs such as these to reduce the amount of refuse and litter?

Signed: Wants Montana Clean

Dear Clean:

My Bureau is charged with responsibility for the disposal of solid waste in the state. Therefore, we are concerned with the total solid waste stream and roadside litter is only a part of the problem. "Bottle bills" are directed at beverage containers which make up a relatively small fraction of the state's solid waste stream and thus would have minimal impact on its total amount.

I would like to see those concerned with source reduction study the many kinds of approaches possible as they would directly affect Montana. We learned from the Resource Recovery study that experiences in other states do not necessarily pertain to Montana with its largely rural population and transportation distances to manufacturing centers. Thus I urge careful consideration of all possible methods of source reduction before recommending a particular kind.

Dear Terry:

If you're going to make steam or electricity from garbage, who's going to buy it?

Signed: Economics Student

Dear Student:

One part of the Resource Recovery Study currently being conducted by our consultants includes determining possible customers for power generated from solid waste. In fact, many potential buyers were located during the second phase of the study. They include industrial facilities which would use the solid waste as a supplemental fuel for their existing steam producing boilers and complexes of public buildings such as schools where new facilities will need to be built. The final portion of the study will have specific recommendations for implementing feasible alternatives. The Bureau and technical committee will be reviewing some of these in the next two months. I'll have more to report then.

Dear Terry:

My grandfather is in the garbage hauling business. He's done it for almost 50 years now. What will happen to people like him when you come up with your plan for taking care of all the state's garbage?

Signed: Loving Granddaughter

Dear Loving:

Let me assure you that no plan we devise will eliminate the private refuse collectors! They are an essential part of the state's solid waste collection system. We are looking at what will ultimately happen to the refuse they collect. For instance, if transfer stations are put into your area, the only change in your grandfather's operation is that he will dump the garbage he collects at the transfer station rather than the small, uneconomical sanitary landfill he now uses. We need people who will provide such a public service within the framework of private enterprise. Give your grandfather my regards!

Signed: Terry Carmody, Chief
Solid Waste
Management Bureau

Bureau To Present Study To Western States Council

The Solid Waste Management Bureau has been invited to make a presentation concerning its Resource Recovery Study to the Western States Council of State Governments energy committee. The council represents eleven western states and according to Terry Carmody, bureau chief, it is an honor for Montana's study to be recognized, with this invitation.

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